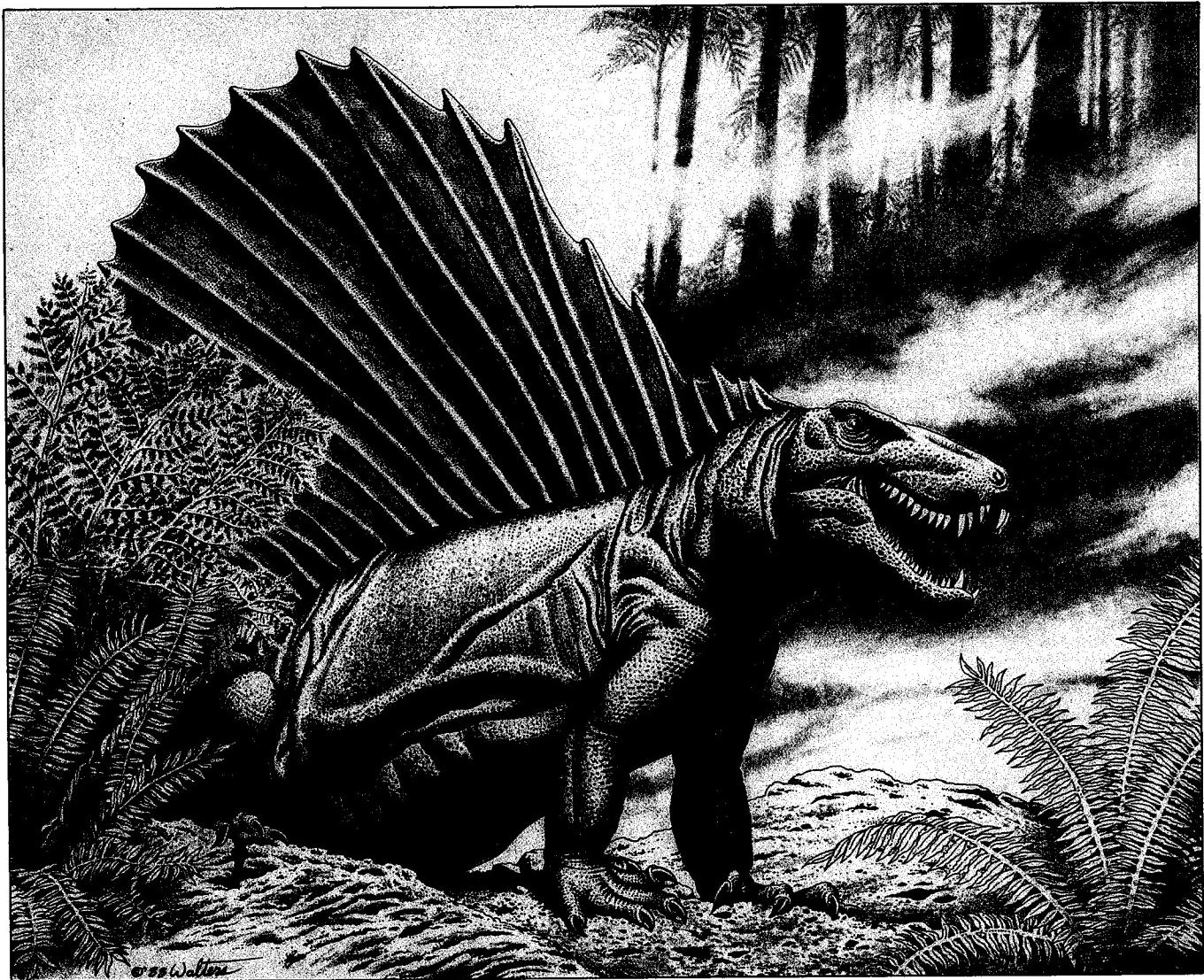


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A Historic Piece of Petrified Wood from the Triassic of Arizona

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Abstract

A piece of petrified wood collected by Samuel W. Woodhouse in 1851 from the Petrified Forest of Arizona is apparently the oldest surviving collected piece of wood from that remarkable Triassic locality.

Introduction

The Petrified Forest National Park, east of Holbrook, Arizona, contains one of the more famous "petrified forests" of the world. Before 1851, no explorations had been made of the arid region in which the Petrified Forest of Arizona occurs; Native Americans were the sole residents there. In the middle of the 16th Century, Spanish Conquistadores had traveled through this general area of northern Arizona, but it is not known whether they saw the Petrified Forest.

Geologically, the Petrified Forest is the area where silicified remains of trees and smaller plants are found in great abundance within the sands and silts laid down by streams. These streams drained the northwestward leading edge of the supercontinent, Pangaea, during the Triassic Period, some 200 million years ago. Occasional catastrophic volcanic events overwhelmed some forest stands during this time, too. This area was several hundred miles inland from the sea, and, paleogeographically, was near the equator. The area today is a high desert. Infrequent but often torrential rains, and large fluctuations of temperature, constantly work to erode the soft sediments, exposing the more resistant silicified wood. The original Triassic forest was composed of species of the tall trees *Araucarioxylon*, *Woodaxis*, and *Schilderia*, as well as many kinds of smaller woody plants. Fossil plant remains from the Petrified Forest area include all sizes of wood, leaves, fruits, and pollens. The megaflora alone is represented by more than 50 plant species. A remarkable paleofauna of vertebrates and invertebrates also is found there.

Stratigraphically, the Petrified Forest crops out in the Petrified Forest Member of the Chinle Formation (pronounced *Chin Lee*). The sediments of the whole formation are largely fluvially deposited; that is, deposited as stream and river sediments. Together with the volcanic ashes that are interbedded with the fluvial deposits, the sediments indicate a raised (landward) area of tectonic activity, like that found at the leading edges of moving continental plates.

Early Discoveries

Petrified wood, although known to have long been used by native Americans for a variety of purposes, was first reported from Arizona by Lt. James H. Simpson of the U.S. Army Corps of Topographical Engineers. He was attached to the expedition commanded by Col. John M. Washington, traveling from Santa Fe, New Mexico, into the Navajo country of northeastern Arizona. On September 5, 1849, at Camp 18, near the head of Canyon del Muerto, near Canyon de Chelly (McNitt, 1964, p. 82), Simpson descended some 300 feet from the rim of the canyon. He wrote in his journal (Simpson, 1852, p. 67):

"At this depth, I found protruding horizontally from the wall, its end only sticking out, a petrified tree of about a foot in diameter, a fragment of which I broke off as a specimen."

The whereabouts or fate of this specimen is not ascertained.

The area within the present boundaries of the Petrified Forest National Park was not visited until late in 1853, when another military expedition reached the area, under the command of Lt. Amiel W. Whipple. On December 2nd, they reached what now is the northern, or Black Forest, section of the national park. The petrified wood there is so obviously abundant that it could hardly have escaped written notice.

The political boundaries of a national park are somewhat arbitrary, however, and the present park does not include all of the Petrified Forest of Arizona. The first explorers to reach the Petrified Forest were those attached to an expedition under the command of Capt. Lorenzo Sitgreaves. In September, 1851, this group passed just south of the present park boundary. They were the first group of non-natives to see this part of Arizona since the days of the Spanish incursions.

The First Piece

In July, 1987, while working in the paleobotany collection at the Academy of Natural Sciences of Philadelphia, I came upon

a piece of silicified wood (Fig. 1), catalogued as ANSP 2263, to which is glued a small, old label reading:

Little Colorado River N. Mexico
Pres. by S. W. Woodhouse, M.D.

The historical nature of this unimposing specimen was clear: this was the first piece of petrified wood collected by a naturalist in Arizona, and perhaps the oldest surviving collected piece of wood from the Triassic of Arizona.

Samuel Washington Woodhouse, at the age of thirty, and having had previous experience with military expeditions of exploration in the "Indian Territory," joined Capt. Sitgreaves' expedition as a physician. However, Woodhouse's background in natural history, particularly zoology, allowed him to serve also as expedition naturalist. Their mission, after departing from Santa Fe, New Mexico, was to travel to the Pueblo of Zuni, then to establish a route westward through the territory of New Mexico, eventually to San Diego, California. They were to determine the navigability of the Zuni River (and whether or not it reached the Colorado River below the great reach of canyons

vaguely known to be in that part of the West) and of the lower portion of the Colorado River along the present boundary between Arizona and California. Although the expedition basically achieved those goals, it was not after suffering terribly for lack of planning, depleted supplies, and exhausted men and animals (Sitgreaves, 1853; Wallace, 1984). The Zuni River is not navigable; it is a tributary to the Little Colorado River which in turn enters the Colorado River at the very head of the Grand Canyon. (The expedition did not reach the canyon, but turned away from the Little Colorado River northeast of present-day Flagstaff, Arizona.)

Early in the expedition, Sitgreaves and company made their way along the valley of the Little Colorado River, and the area of the Petrified Forest was reached in late September, 1851. Woodhouse first took note of petrified wood on September 28th, when traveling between Camps 4 and 5. He wrote in his diary (Library of the Academy of Natural Sciences, Manuscript Collection 387B, vol. 3, p. 89):

"On one of the small hills I saw the remains of a very large petrified tree which must have been from 2 1/2 to 3 ft in diameter[.]"

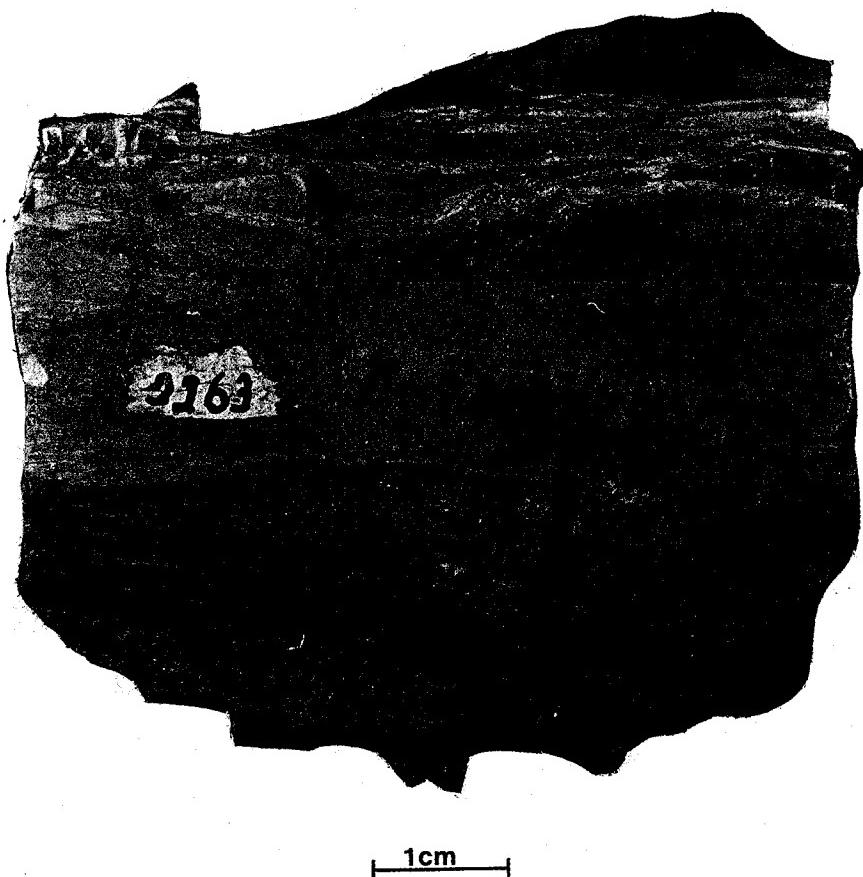


Figure 1. ANSP 2263, Paleobotany Collection. The label reads, "Little Colorado River; N. Mexico; Pres. by S. W. Woodhouse, M.D." This specimen is from the Petrified Forest Member of the Chinle Formation (Triassic), probably taken at Camp 6 of the Sitgreaves Expedition, about 15 miles southeast of present-day Holbrook, Arizona, on September 29, 1851. The specimen was donated by Woodhouse to the Academy of Natural Sciences on April 12, 1859.

The next day, at Camp 6, Woodhouse wrote (vol. 3, p. 91):

"The camp is situated on on [sic] a ridge near the river this ridge is filled with petrified wood much of which [sic] is very is very [sic] handsomely coloured."

These are the only notes on petrified wood in Woodhouse's diary. Camp No. 6 was approximately 15 miles southeast of present-day Holbrook, Arizona, just southwest of the boundary of the Petrified Forest National Park, probably near the confluence of Milky Wash and the Little Colorado River (Ash, 1972; Wallace, 1984). After leaving Camp 6, Woodhouse observed (vol. 3, p. 92, September 30th) that "Portions of agatized wood are found abundant along various portions of this stream." This same sentence is the only note on petrified wood which Woodhouse included in his published report (Woodhouse, 1853, pp. 36-37). Sitgreaves' journal (1853, p. 7) mentions petrified wood on the ground, too:

"The ground was strewed with pebbles of agate, jasper, and chalcedony, and masses of what appeared to have been stumps of trees petrified into jasper, beautifully striped with bright shades of red, (the predominating color,) blue, white, and yellow."

This entry was dated September 28, at Camp 5, but Camp 6 and September 29 are omitted; the entry may have been appended at Camp 6.

That no other references to petrified wood are recorded from the Sitgreaves expedition, it seems likely that the specimen in the Academy's collection is from the vicinity of Camp 6, where the wood occurs in such abundance. Woodhouse, a member of the Academy, deposited three pieces of Arizona petrified wood with the Academy on April 12, 1859, as noted in a published list of donations (Academy of Natural Sciences, 1859, p. ii):

"Three specimens of opalized wood. Little Colorado, New Mexico.
Presented by Dr. Woodhouse."

The other two specimens have not been located; they presumably were about the same size as the one figured here. Considering the privations suffered by the men and animals of the expedition, and the weight taken up by Woodhouse's collected animal skins and personal materials, it seems likely that little space would have been allocated to rocks.

The specimen shown in Figure 1 is therefore, inescapably, the first specimen collected by a naturalist in the remarkable Petrified Forest of Arizona.

Acknowledgements

I wish to thank the Library of the Academy of Natural Sciences of Philadelphia for allowing me to examine the diaries of Samuel W. Woodhouse. Thanks also are extended to the Academy's Department of Botany for permission to use the paleobotanical collections.

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